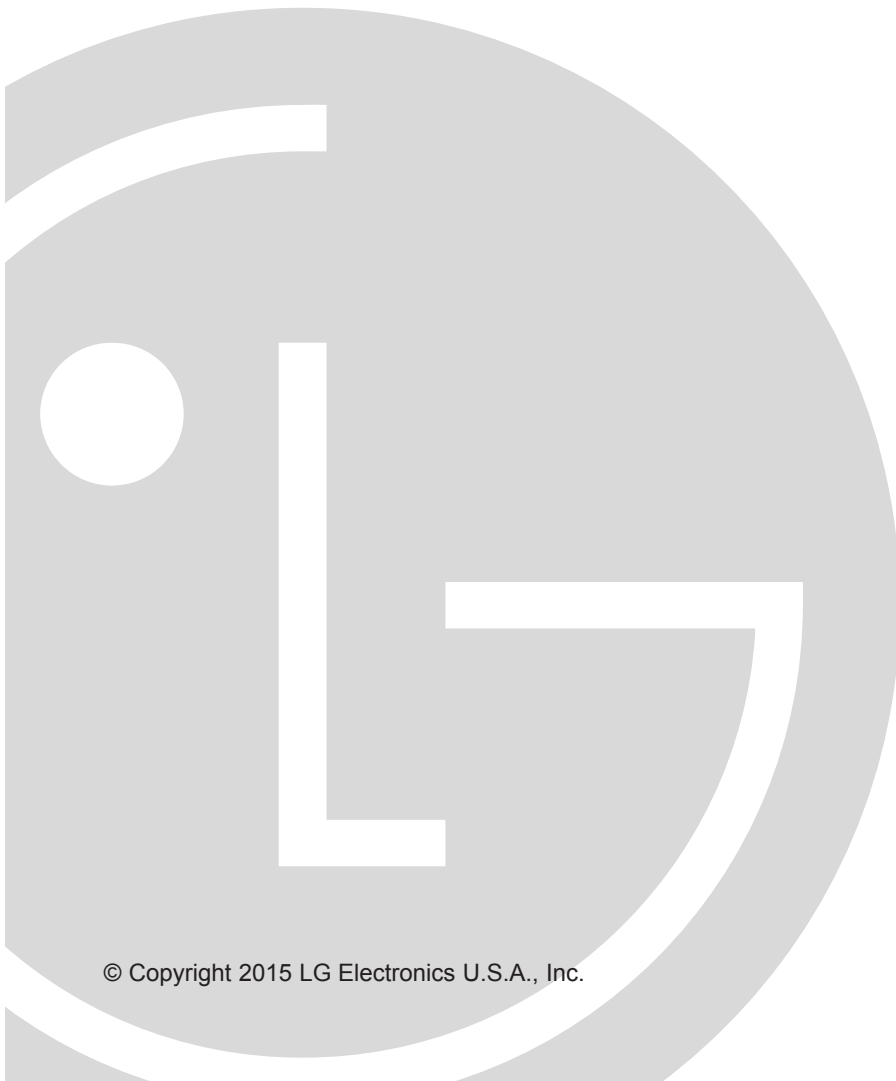








# PCS200R Pro:Centric<sup>®</sup> Server

## Installation & Setup Guide Warranty



For Customer Support/Service, please call: **1-888-865-3026**

The latest product information and documentation is available online at: [www.LGolutions.com](http://www.LGolutions.com)

	<b>WARNING</b> RISK OF ELECTRIC SHOCK DO NOT OPEN	
<b>WARNING:</b> TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER TO QUALIFIED SERVICE PERSONNEL.		
	The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.	
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.	

**WARNING:**

TO PREVENT FIRE OR SHOCK HAZARDS, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

L'appareil ne doit pas être exposé à des égouttements d'eau ou des éclaboussures et de plus qu'aucun objet rempli de liquide tel que des vases ne doit être placé sur l'appareil.

**WARNING:**

This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. **Wash hands after handling.**

**FCC NOTICE (For USA and Canada):**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation of the device. Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**CAUTION:**

Do not attempt to modify this product in any way without written authorization from LG Electronics U.S.A., Inc. Unauthorized modification could void the user's authority to operate this product.


**COMPLIANCE:**

The responsible party for this product's compliance is: LG Electronics U.S.A., Inc.  
2000 Millbrook Drive, Lincolnshire, IL 60069, USA • Phone: 1-847-941-8000

Marketed and Distributed in the United States by LG Electronics U.S.A., Inc.  
2000 Millbrook Drive, Lincolnshire, IL 60069

# IMPORTANT SAFETY INSTRUCTIONS

---

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources, such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where it exits from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination in order to avoid injury from tip-over.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14. **Power Sources**  
This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your INSTALLATION, consult your product dealer or local power company.
15. **Overloading**  
Do not overload wall power outlets and extension cords as this can result in a risk of fire or electric shock.
16. **Disconnect Device**  
The AC mains plug is used as the disconnect device. The disconnect device must remain readily operable.
17. **Object and Liquid Entry**  
Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product. Do not use liquid cleaners or aerosol cleaners.
18. **Outdoor Use**  
 **Warning: To prevent fire or shock hazards, do not expose this product to rain or moisture.**
19. **Wet Location**  
Do not use this product near water or moisture or in an area, such as a basement, that might become flooded. The apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.
20. **Test Equipment**  
In some cases, LG has supplied or recommended the use of test equipment and devices for the setup and testing of the equipment. The operation and maintenance of test equipment is described in their associated instruction manuals. Please refer to these manuals for explicit instructions regarding the safe use and handling of the equipment.

(Continued on next page)

# IMPORTANT SAFETY INSTRUCTIONS

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(Continued from previous page)

## 21. Damage Requiring Service

Unplug this product from the wall power outlet and refer servicing to qualified service personnel under the following conditions:

- a. If the power-supply cord or plug is damaged.
- b. If liquid has been spilled, or objects have fallen into the product.
- c. If the product has been exposed to rain or water.
- d. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- e. If the product has been dropped or the cabinet has been damaged.
- f. If the product exhibits a distinct change in performance.



**Caution: Refer all servicing to qualified service personnel.**

## 22. Servicing



**Caution: These servicing instructions are for use by qualified service personnel only. To reduce the risk of electrical shock, do not perform any servicing other than that described in the operating instructions unless you are qualified to do so.**

## 23. Replacement Parts

When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or that have the same characteristics as the original parts. Unauthorized substitutions may result in fire, electric shock, or other hazards.

## 24. Safety Check

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.

## 25. Handling Notice



**Caution: Only qualified service personnel should handle and install this unit. A series of screws with lock washers are used to secure the top and bottom covers of the unit. Use caution when handling the unit as the lock washers may have rough edges. Do NOT run your fingers over the top and bottom covers of the unit.**

# IMPORTANT SAFETY INSTRUCTIONS

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## **PCS200R Rack Installation**

(also see pages 11 to 12)

- Wear a properly grounded, antistatic wrist strap to avoid causing electrostatic (ESD) damage to the PCS200R.
- Carefully slide the PCS200R into a standard 19-inch equipment rack.
- When mounting in the rack, make sure to use the appropriate hardware. **ALL FOUR MOUNTING SCREWS MUST BE USED.**
- This equipment is not designed to support other devices. Do NOT stack other equipment on the top of the PCS200R.
- Rear cabling must be dressed and supported so that the weight of the cabling is not a strain on the PCS200R connectors.
- **MOUNTING OF THE EQUIPMENT IN THE RACK SHOULD BE SUCH THAT A HAZARDOUS CONDITION IS NOT ACHIEVED DUE TO UNEVEN MECHANICAL LOADING.**

## **Rack-mount Considerations**

### **A. Elevated Operating Ambient**

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified by the manufacturer (see Specifications information in this document).

### **B. Reduced Air Flow**

Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. To ventilate the system normally and avoid overheating, leave at least 1 inch (2.5 cm) on each side (including top and bottom) of the PCS200R. Do NOT stack other equipment on the top of the PCS200R. Also, ensure that the unit's AC power adapter is never stacked or bundled with other AC power adapters. Each adapter should have adequate ventilation and should be isolated from other heat sources.

### **C. Circuit Overloading**

Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring.

### **D. Reliable Earthing**

Maintain reliable earthing of rack-mounted equipment. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

### **E. Mains Outlet Earthing**

The apparatus with Class I construction must be connected to a mains socket outlet with a protective earthing connection.

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## Notes

- Design and specifications subject to change without prior notice.
- This document provides examples of typical command line interface displays. Your displays may vary from those shown in this document.

# PCS200R Product Description

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The LG PCS200R Pro:Centric<sup>®</sup> server is a stand-alone, remotely-controlled processor and controller for the Pro:Centric system. The server can be used to capture data from an Internet source, assemble the data as display pages, and output the pages in DTV format over ASI, RF, or IP.

## Features

- Three output options: ASI, RF, or IP
  - ASI output: The PCS200R generates one channel for GEM data only or multiplexed GEM/site data.
  - RF output: Both QAM-B (6 MHz) and DVB-C (7 MHz or 8 MHz) modulations are supported. The PCS200R generates one 256-QAM or 64-QAM RF channel for GEM/site data.
  - IP output: The PCS200R generates two multicast streams for GEM/site data.
- Customer may work with content provider to create Pro:Idiom<sup>®</sup> encrypted content on a SATA solid state drive (SSD) for RF or IP video playout channels
  - RF output: In addition to the GEM/site data channel, the PCS200R generates up to seven contiguous 256-QAM or 64-QAM RF channels for video playout. Each of these channels supports either two or three program streams multiplexed on each channel. This capability provides output of up to 21 programs of video content.
  - IP output: In addition to two multicast streams for GEM/site data, the PCS200R generates 21 multicast data streams for video playout. Each data stream supports one program. This capability provides output of up to 21 programs of video content.
- Provides remote management capability over Ethernet
- Small, lightweight chassis
- 19-inch rack-mountable
- 1U height profile to minimize rack space usage

An Internet browser-based Admin Client graphical user interface (GUI), provided for system integrator (SI) partners and lodging/institution administrators, facilitates support and maintenance of the Pro:Centric system. The Admin Client enables users to remotely manage system backups, output configuration, software updates, portal/information section content, TV configuration settings, etc.

# Setup Information

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Check the following items before you begin the PCS200R installation and setup procedures.

**Note:** Once the PCS200R hardware is installed and the initial setup completed, output parameters are configured in the Pro:Centric server Admin Client. Along with this document, it is recommended that you have a copy of the **Pro:Centric Server Admin Client User Guide** readily available.

## PCS200R

\_\_\_ Unpack the PCS200R Pro:Centric server unit and all accessories.

<p><b>PCS200R Accessories:</b></p> <ul style="list-style-type: none"><li>• AC Power Cord and Adapter</li><li>• Four M3 x 5 mm screws for (optional) SATA SSD assembly</li><li>• Four lock washers for (optional) SATA SSD assembly</li></ul>
--

\_\_\_ Select the location for mounting the PCS200R. Ensure adequate ventilation is available.

\_\_\_ Obtain the necessary attachment hardware to mount the PCS200R chassis in its targeted location.

\_\_\_ Plan and install the necessary cabling and network (Ethernet) and AC power access for the PCS200R. You also will need the following to connect a PC directly to the PCS200R for system setup purposes: FTDI TTL-USB cable (P/N TTL-232R-5V-AJ).

## SATA Solid State Drive (Optional)

\_\_\_ To provide additional media/video playout channels, a customer-supplied SATA solid state drive may be installed in the SSD slot on the PCS200R rear panel. The solid state drive used must be UL listed, FCC compliant, and/or other applicable agency-recognized/listed. (Maximum current draw = +5V DC @ 2.0 Amps)

## Video Channel Assignments for RF Output (QAM-B) with Solid State Drive

Each input program is limited to one-half or one-third of the output channel bitrates (Mbps), which in turn are dependent on the modulation format. 256-QAM modulation supports up to 38.8 Mbps, and 64-QAM modulation supports up to 26.97 Mbps.

\_\_\_ Create a channel assignment plan for the installation site, or modify an existing plan to incorporate the RF output of the PCS200R. Ensure that up to eight contiguous CATV broadcast channels are allocated for the PCS200R RF output. The PCS200R uses a 256-QAM or 64-QAM modulation format, thereby occupying approximately 48 MHz of frequency spectrum.

The RF start channel is user-assigned during system setup (in the Admin Client), and the remaining channels (up to seven) are then automatically assigned per EIA-542 STD CATV frequency allocation standards. For example, if the RF start channel assignment is channel 2, the seven remaining channels will be 3, 4, 5, 6, 95, 96, and 97. Refer to EIA-542 STD CATV frequency allocation tables for further information as required.

The highest available RF channel number for the PCS200R is 135. Thus, to allocate all eight channels available for PCS200R RF output, the RF start channel must be set no higher than 128.

\_\_\_ Find a location on the frequency spectrum that is free of existing noise.



# Setup Information (Cont.)

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## Video Channel Assignments for RF Output (DVB-C) with Solid State Drive

Each input program is limited to one-half or one-third of the output channel bitrates (Mbps), which in turn are dependent on the modulation format. 256-QAM modulation supports up to 45.05 Mbps (7 MHz bandwidth) or 50.87 Mbps (8 MHz bandwidth), and 64-QAM modulation supports up to 33.79 Mbps (7 MHz bandwidth) or 38.15 Mbps (8 MHz bandwidth).

- \_\_\_ Create a channel assignment plan for the installation site, or modify an existing plan to incorporate the RF output of the PCS200R. Ensure that up to eight contiguous CATV channel frequencies are allocated for the PCS200R RF output. The PCS200R uses a 256-QAM or 64-QAM modulation format, thereby occupying approximately 56 MHz or 64 MHz (depending on channel bandwidth) of frequency spectrum.

The RF start channel frequency is user-assigned, in KHz, during system setup (in the Admin Client), and the remaining channel frequencies (up to seven) are then automatically assigned in accordance with the specified bandwidth. For example, if the RF start channel frequency assignment is 57000 KHz with a 7 MHz bandwidth, the seven remaining channel frequencies will be 64000 KHz, 71000 KHz, 78000 KHz, 85000 KHz, 92000 KHz, 99000 KHz, and 106000 KHz.

The highest available RF channel frequency for the PCS200R is 861000 KHz.

- \_\_\_ Find a location on the frequency spectrum that is free of existing noise.

## Video Channel Assignments for IP Output with Solid State Drive

Each IP stream is limited to 19.4 Mbps.

- \_\_\_ The PCS200R outputs IPv4 multicast streams. Ensure the institution's IP network and room receivers support IPv4 multicast and that the network is capable of selectively routing multicast traffic. Refer to vendor equipment documentation for further information.
- \_\_\_ Create a channel assignment plan for the installation site, or modify an existing plan to incorporate the IP output of the PCS200R. Ensure that up to 23 unused and unreserved IPv4 multicast addresses, within the designated range 224.0.0.0 to 239.255.255.255, are allocated for the PCS200R IP output.

The IP start channel is user-assigned during system setup (in the Admin Client), and the remaining channel assignments are then automatically incremented. For example, if the IP start channel assignment is 227.0.0.40, the remaining channels will be 227.0.0.41, 227.0.0.42, etc.

- \_\_\_ Reserve one User Datagram Protocol (UDP) port for the multicast data streams. You can use the system default (1234) or another unassigned port number, for example, 50000, 50001, etc. The port must avoid conflict with other protocols in use.

**Note:** Refer to the IANA IPv4 Multicast Address Space Registry and/or the IANA Service Name and Transport Protocol Port Number Registry for further IP address/port information as required.

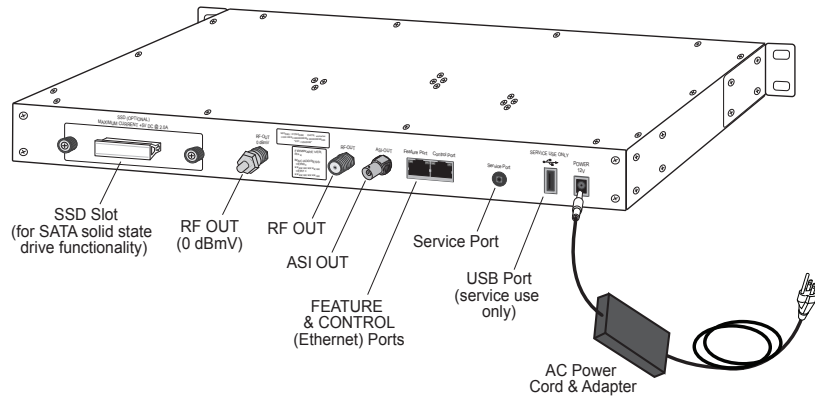
## ASI Output (Optional)

ASI output supports up to 19.4 Mbps each for GEM and site data (total of 38.8 Mbps).

- \_\_\_ If the system is using ASI output, install the modulator and upconverter that will receive the ASI output signal from the PCS200R. Refer to the manufacturer's documentation.

# Rear and Front Panel Overviews

## PCS200R Rear View



### Disconnect Device

The AC mains plug is used as the disconnect device. The disconnect device must remain readily operable.



### RF OUT (0 dBmV) Connector

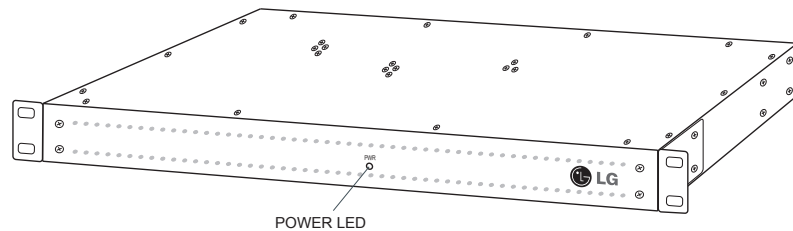
Reserved for service technician use only. When not in use, this connector must remain terminated with attached terminator accessory.



### USB Port

Reserved for service technician use only.

## PCS200R Front View



### Ventilation

Air flow must not be obstructed. To ventilate the system normally and avoid overheating, leave at least 1 inch (2.5 cm) on each side (including top and bottom) of the PCS200R. Do NOT stack other equipment on the top of the PCS200R.



### Screws with Lock Washers

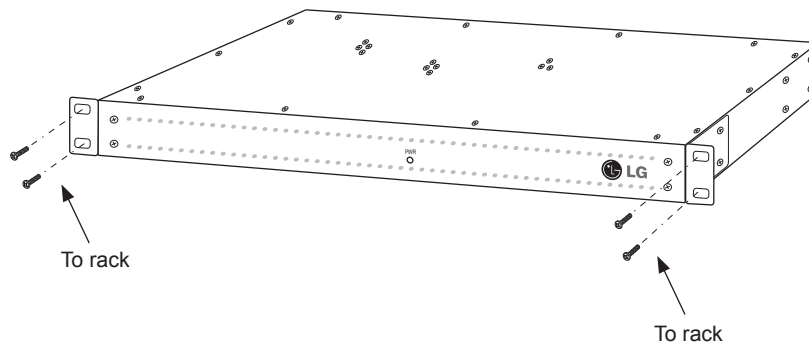
Only qualified service personnel should handle and install the PCS200R. A series of screws with lock washers are used to secure the top and bottom covers of the PCS200R. Use caution when handling the unit as the lock washers may have rough edges. Do NOT run your fingers over the top and bottom covers of the unit.

# Rack Installation

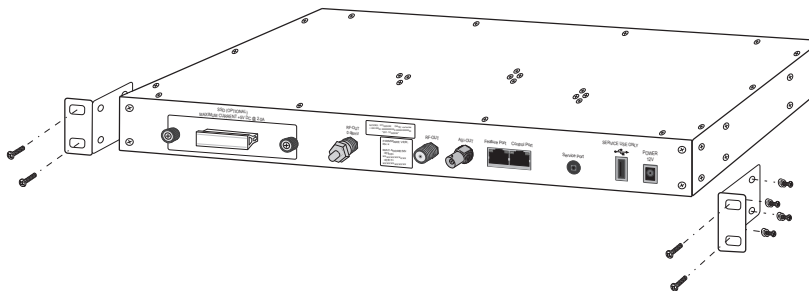
## Typical Rack Installation

1. To avoid causing electrostatic (ESD) damage to the PCS200R during installation, attach an antistatic wrist strap to a properly grounded rack/object and put it on.
2. (Optional) As shipped, the PCS200R mounting brackets are attached flush with the front of the unit (see diagram a). If desired, the mounting brackets may be detached from the unit and reattached, for example, so that they are flush with the rear of the unit (see diagram b). If you wish to change the location/orientation of the mounting brackets, carefully remove each of the four (M4 x 10 mm) screws and attendant washers (one flat and one lock washer per screw) holding each bracket in place. Then, use the same screws and washers to reattach the mounting brackets in the desired location.
3. Carefully slide the chassis into a standard 19-inch equipment rack.
4. Use all four mounting screws to secure the chassis to the rack.

(a)



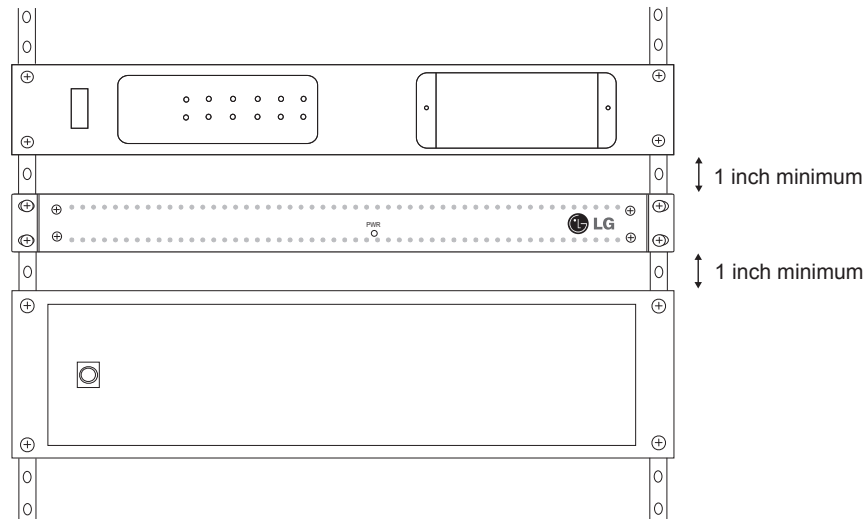
(b)



Use flat washer and lock washer with each M4 x 10 mm mounting bracket screw.

# Rack Installation (Cont.)

Front View  
of Rack Cabinet



## Rack-mount Considerations

### A. Elevated Operating Ambient

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified by the manufacturer (see Specifications information in this document).

### B. Reduced Air Flow

Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised. To ventilate the system normally and avoid overheating, leave at least 1 inch (2.5 cm) on each side (including top and bottom) of the PCS200R. Do NOT stack other equipment on the top of the PCS200R unit. Also, ensure that the unit's AC power adapter is never stacked or bundled with other AC power adapters. Each adapter should have adequate ventilation and should be isolated from other heat sources.

### C. Circuit Overloading

Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring.

### D. Reliable Earthing

Maintain reliable earthing of rack-mounted equipment. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips).

### E. Mains Outlet Earthing

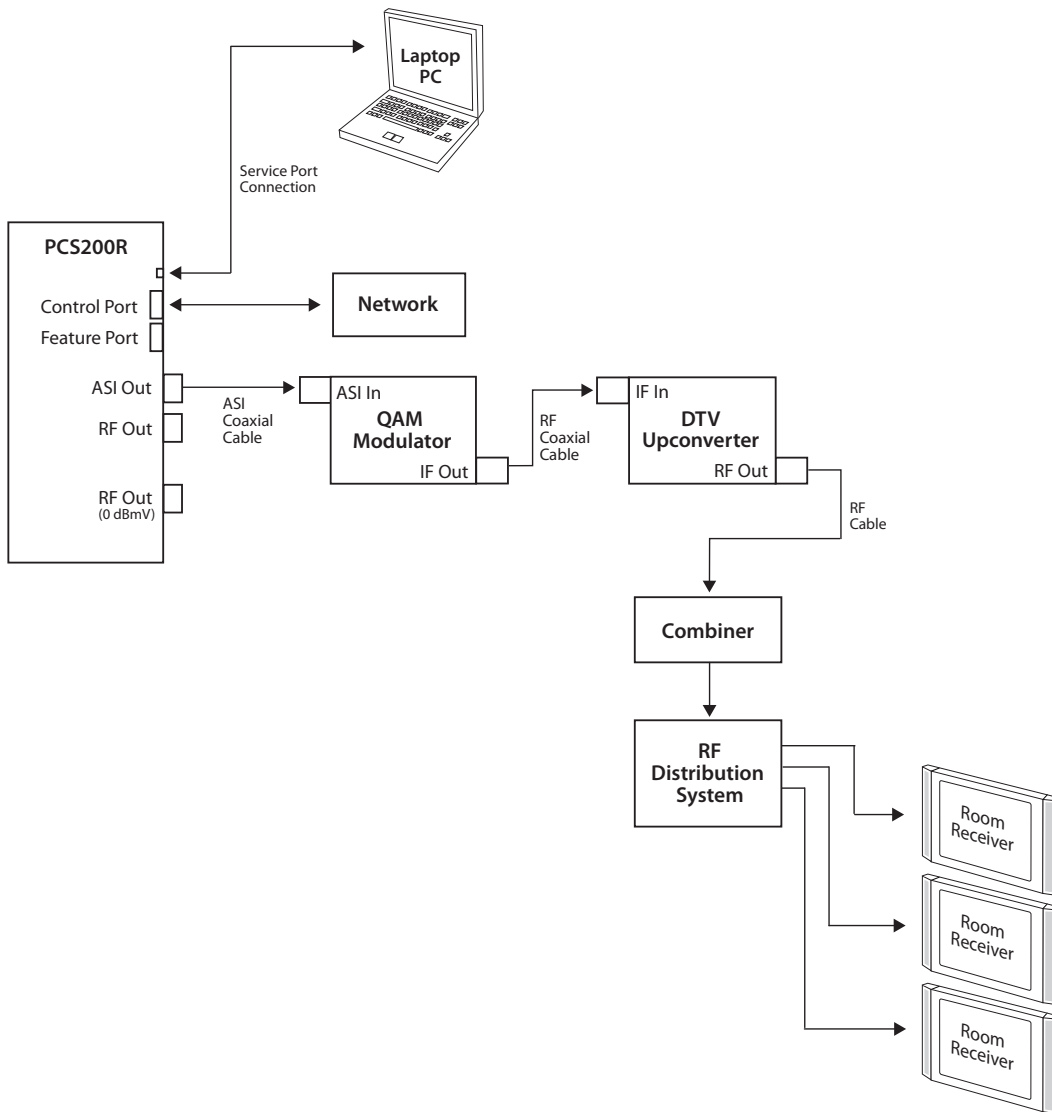
The apparatus with Class I construction must be connected to a mains socket outlet with a protective earthing connection.

# System Setup

Refer to the following diagrams, and complete the system installation as described on pages 16 to 19.

**Caution:** Do NOT make system connections until instructed to do so during the system installation procedure. In some instances, configuration steps must be performed before physical connections are made.

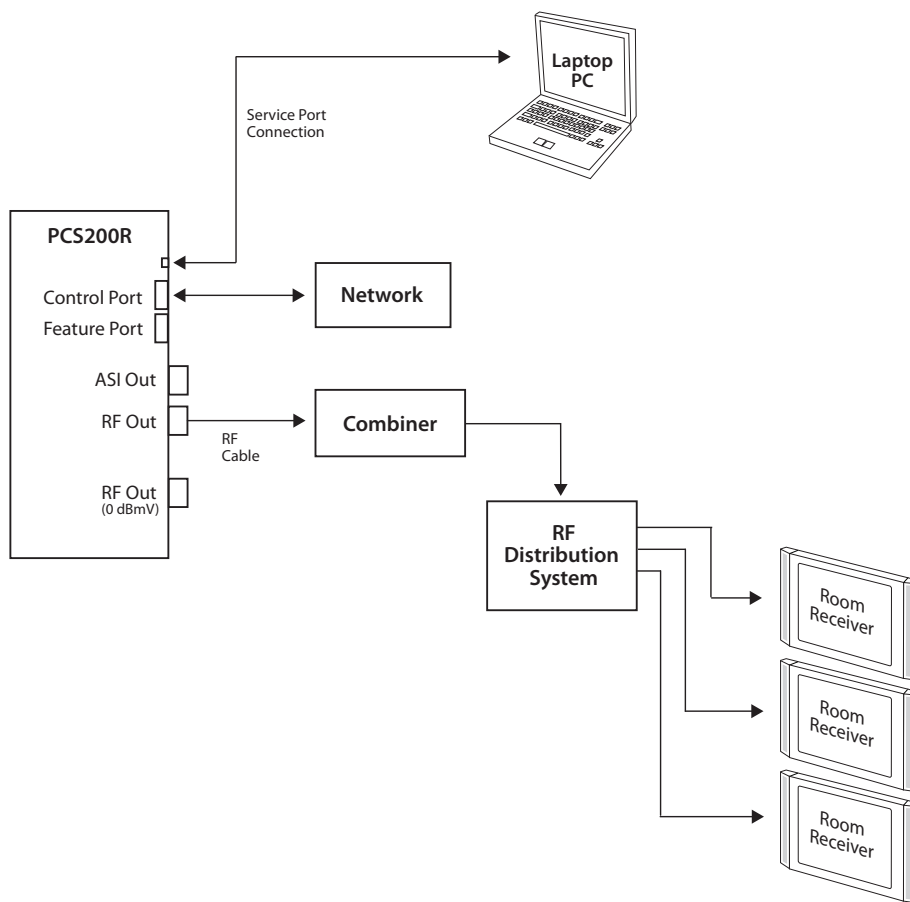
## Typical Setup Flow Chart for PCS200R with ASI Output



# System Setup (Cont.)

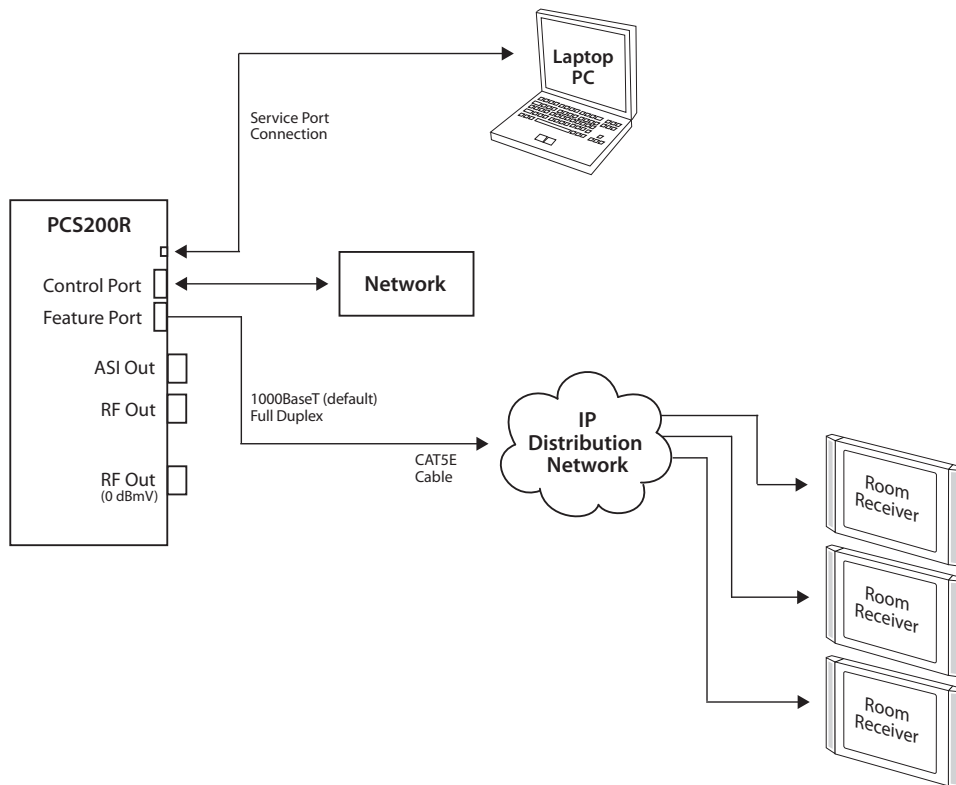
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Typical Setup Flow Chart for PCS200R with RF Output

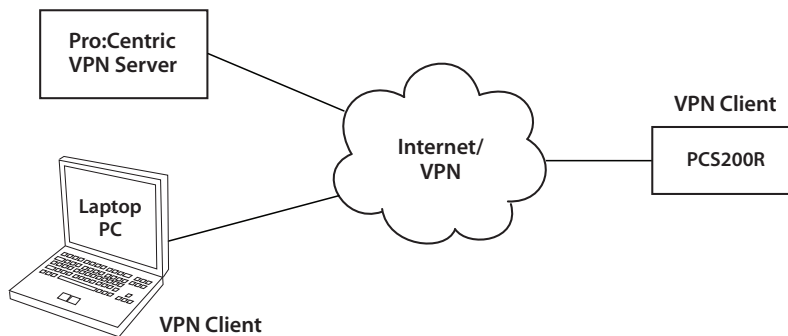


# System Setup (Cont.)

## Typical Setup Flow Chart for PCS200R with IP Output



## VPN Network Connections Overview



# System Setup (Cont.)

---

## Typical System Installation

(see also Typical Setup Flow Charts and VPN Network Connections Overview diagrams)

1. (Optional) To provide capacity for additional media/video playout channels, install a SATA solid state drive (customer-supplied) in the SSD slot on the PCS200R rear panel. See Reference section, "Using an SSD Storage Device with the PCS200R," for further information.
2. If your system is using ASI output, make the following connections; otherwise, go to step 3.
  - Connect a 75 ohm BNC-to-BNC coaxial cable between ASI OUT on the PCS200R and ASI IN on the modulator.
  - Connect an RF coaxial cable between IF OUT on the modulator and IF IN on the upconverter.

 **Note: The BNC cable must be less than 30 feet (9.2 meters) in length.**

3. To enable remote management, connect one end of a CAT5 RJ-45 Ethernet cable to the Control Port on the PCS200R rear panel, and connect the other end of the cable to the institution's network.
4. Connect the PCS200R power supply to the POWER connector on the PCS200R rear panel. Then, plug the AC power cord into a powered AC line receptacle. When power is applied, the PWR (Power) LED on the PCS200R front panel will initially flash red and then turn green (blinking during boot-up).


The boot-up process for the PCS200R may take up to two minutes. When boot-up is complete, the PWR LED on the PCS200R front panel will light continuously green.

5. Once the PWR LED is lit continuously (no longer blinking), use the FTDI TTL-232R-5V-AJ cable to connect a PC to the Service Port on the PCS200R rear panel.
6. Using HyperTerminal or an equivalent terminal emulation program on the PC, configure the serial port as follows: Bits per second/baud = 115200; Data bits = 8; Parity = None; Stop bits = 1; Flow Control = None

**Note:** To avoid configuration errors, make sure the keyboard settings on the terminal emulator assign the backspace character to Ctrl + H (ASCII 8).

Once the connection is established, you should see a login prompt. (If the login prompt is not automatically displayed, press **Enter** to refresh the screen.)

7. At the `login as:` prompt, type **admin** and press **Enter**. Then, at the `password:` prompt, type **Password4Partners** (case-sensitive) and press **Enter**.
8. At the `Command >` prompt, type **info** and press **Enter**. (You can press **Enter** at any PCS200R command prompt to view current menu, if desired.)

 **Note: After the system setup is complete, it is highly recommended that you change the admin user password from its default value. See "Change the Login Password" on page 28 for further information.**

(Continued on next page)



# System Setup (Cont.)

(Continued from previous page)

The initial System Information display identifies PCS200R default configuration settings, including the Control Port IP address and the output configuration, for example:

```
PCS200R Pro:Centric Server v7.4
Copyright (c) 2010 - 2015 Zenith Electronics LLC

SN:                201-12301011
Hardware ID:       2
OS version:        Linux 3.4.0-zenith-pcs200+
OS release:        #121 SMP Mon Dec 8 10:38:49 CST 2014
Ctrl MAC:          00:0C:63:40:36:14
Ctrl IP:           10.1.2.3
Feat MAC:          00:0C:63:40:36:15
Feat IP:           n/a
VPN IP:            n/a
RF config:         Mode 3, 256-QAM-B, RF: 6 MHz, 5.36 MSps, ASI: 38.81 Mbps
RF channel:        75
Channels:          1
Local time:        Mon Jan 19 14:42:02 EST 2015
```

9. Check the Ctrl IP (Control Port IP address) field in the System Information display. By default, the PCS200R uses DHCP; thus, the DHCP server, if configured, assigns an IP address to the Control Port once the PCS200R successfully connects to the network.
  - If the Ctrl IP field shows an IP address, the PCS200R is up and running on the network. If you wish to configure a static IP address for the Control Port and/or if you need to configure a static IP address for the Feature Port (for IP output purposes), continue with step 10. Otherwise, you can go to step 11 at this time.
  - If the network is configured for DHCP but the Ctrl IP field is blank, refer to “Network Setup” troubleshooting information on page 35.
  - If the network is not configured for DHCP, you will need to configure a static IP address for the PCS200R Control Port as described in step 10.
10. This step describes how to set a static IP address for the Control Port and/or Feature Port.



**Caution: Setting a static IP address for the Control Port (for remote management purposes) is optional. However, if you will be using IP output from the PCS200R, you MUST configure the Feature Port as described in step (c) below.**

- a) At the `Command >` prompt, type **setip** and press **Enter**. The system will display the current network configuration, followed by the Network Configuration Menu.

(Continued on next page)

# System Setup (Cont.)

---

(Continued from previous page)

Use the Network Configuration Menu commands indicated below and follow the system prompts to configure the port(s). See “Configure Network Settings” on pages 22 to 25 for further information.

- b) Use the “eth0” and “dns” commands to configure the Control Port, as necessary.
- c) Use the “eth1” command to configure the Feature Port, if required, for PCS200R IP output.

Note that the Feature Port MUST be configured with a static IP address that is on a different subnet than the Control Port IP address. Also, make sure the Feature Port speed (default: 1000 Mbps) is appropriate for your system. If necessary, at the prompt for the port speed, change the value to 100 Mbps.

- d) When you are finished with network configuration, type **exit** at the Network Configuration Menu > prompt. The system will display an overview of the new network configuration and then prompt for confirmation to save the changes:

Do you want to save the new configuration? [y/n]:

Type **y** or **n** and press **Enter**, as appropriate.

**Note:** Review the New Network Configuration overview carefully before you confirm the configuration settings. Ensure each of the addresses was entered correctly.

**Note:** If you changed the configuration of the port(s), you will be prompted to reset the system. You may wait to reset the system until you are directed to do so in step 13.

## 11. (Optional) Set the date and time on the PCS200R.

By default, the PCS200R is synchronized with an NTP server and configured for the US Eastern time zone. If the PCS200R is connected to the Internet, the NTP client will periodically update the time setting on the PCS200R. You can set the time zone as required. If the PCS200R is not connected to the Internet, you also have the option to disable NTP synchronization and specify date and time data manually.

Use the PCS200R “tz” and/or “time” commands (available from the `Command >` prompt), as necessary, to set the date and time on the PCS200R.

- Use the “tz” command and follow the system prompts to change the time zone.
- Use the “time” command and follow the system prompts to change the NTP configuration or manually configure the date and time parameters on the PCS200R.

See “Set the Time Zone” and “Set the Date and Time” on pages 25 to 28 for further information.

**Note:** If you changed the time zone and/or the NTP configuration, you will be prompted to reset the system. You may wait to reset the system until you are directed to do so in step 13.

(Continued on next page)

## System Setup (Cont.)

---

(Continued from previous page)

12. If a SATA solid state drive is installed (see step 1), the drive's file system must be properly formatted. If the drive was previously formatted for use with another PCS200R, you do not need to reformat the drive. Otherwise, at the `Command >` prompt, type **format** and press **Enter**. Then, follow the system prompts to initiate the formatting.



**Caution: This operation deletes any files that are currently present on the drive. See "Format the Solid State Drive File System" on page 30 for further information.**

13. If you made any configuration changes in steps 10 and 11 that require a system reset, at the `Command >` prompt, type **reset** and press **Enter**.

The reset process may take up to two minutes, after which the PCS200R resumes normal operation.

14. Make the appropriate connection to the RF distribution system or IP distribution network depending on the PCS200R output option to be used:
  - ASI output: Connect the RF output on the upconverter to the RF distribution center combiner, and balance the RF signal so that the Pro:Centric signal level at the TV(s) is between 0 to +7 dBmV.
  - RF output: Connect RF OUT on the PCS200R to the RF distribution center combiner, and balance the RF signal so that the Pro:Centric signal level at the TV(s) is between 0 to +7 dBmV.
  - IP output: Connect a CAT5E or better Ethernet cable between the Feature Port on the PCS200R rear panel and the institution's IP distribution network.



**Caution (ASI/RF Output only): For proper system performance, the Pro:Centric signal level at the TV input (ANTENNA IN) must be between 0 to +7 dBmV. Note that additional equipment may be required to adjust the signal level.**



**Caution: When not in use, the RF OUT (0 dBmV) connector must remain terminated with attached terminator accessory.**

15. Configure the ASI/RF or IP output parameters and/or the Video Playout settings in the Pro:Centric server Admin Client. Refer to the *Pro:Centric Server Admin Client User Guide* for further information.

**Note:** By default, the server output is enabled for 256-QAM-B modulation (RF output), with the data channel set to 75.

16. Check one or more room receivers to make sure all content is properly mapped and available.

# Network and Communication Setup

---

This section describes PCS200R communication options for configuration purposes.



**Note:** Before you proceed with any additional configuration, the system should be installed and operating as described in the system installation procedure on pages 16 to 19.

Also note that configuration updates periodically require that you reset the PCS200R. Make sure to reset the unit when directed to do so.

There are two options for communicating with the PCS200R:

- When the PCS200R is connected to an IP network, you can use an SSH client to communicate with the PCS200R via a command line interface.
- To establish a direct connection to the PCS200R, connect a PC to the serial port on the PCS200R rear panel using the FTDI TTL-USB cable (P/N TTL-232R-5V-AJ). Plug the USB end of the cable into an open USB port on your PC. If necessary, install the device driver. Plug the other end of the cable into the Service Port jack on the PCS200R rear panel.

Using HyperTerminal or an equivalent terminal emulation program on the PC, configure the serial port as follows:

- Bits per second/baud = 115200
- Data bits = 8
- Parity = None
- Stop bits = 1
- Flow Control = None

**Note:** To avoid configuration errors, make sure the keyboard settings on the terminal emulator assign the backspace character to Ctrl + H (ASCII 8).

You will need to know the “admin” user password in order to log in to the command line interface. The default admin user password is “Password4Partners” (case-sensitive). If necessary, for example, if the password has been changed from its default value, consult the system administrator to obtain the current admin user password.

**Note:** The default network setting for the PCS200R is DHCP, in which case the server assigns an IP address to the PCS200R. If necessary, consult the network administrator to obtain the IP address that has been assigned to the PCS200R.

**Note:** If you want to connect the PC directly to the PCS200R Control Port using an Ethernet CAT5E cable, in order to establish communication you must first connect the PC to the PCS200R Service Port and set the PCS200R’s IP address (see “Configure Network Settings” on pages 22 to 25). The PCS200R’s IP address must be on the same subnet as the PC’s IP address.

# PCS200R Configuration Options

---

## Log In to the PCS200R and Access the Main Menu

**Note:** The PCS200R must be connected to an IP network for SSH client access. For direct access to the PCS200R Service Port, use the FTDI TTL-USB cable (P/N TTL-232R-5V-AJ). See also “Network and Communication Setup” on page 20 for further information.

If necessary, consult the system administrator to obtain the current “admin” user password before proceeding. The default admin user password is “Password4Partners” (case-sensitive).

1. Establish communication with the PCS200R using an SSH client or via a direct connection to the PCS200R Service Port.

Once communication is established, you should see a login prompt. (If the login prompt is not automatically displayed, press **Enter** to refresh the screen.)

2. At the `login as:` prompt, type **admin** and press **Enter**.
3. At the `Password:` prompt, type the admin password and press **Enter**.
4. At the `Command >` prompt, either:
  - Press **Enter** to display the PCS200R Main Menu (see example below).
  - Type the desired command and press **Enter**.

The following sections describe each of the configuration commands.

**Note:** You can always press **Enter** at the `Command >` prompt to display the PCS200R Main Menu.

### *Example: PCS200R Main Menu*

```
-----  
Main Menu  
-----  
info          System information  
setip         TCP/IP Setup Menu  
tz            Timezone setup  
time         Time setup  
pwd           Change password  
monitor      System monitor  
format       Format drive to ext3 file system  
update       Update  
updser       Update via serial link  
vpn          VPN setup  
shut         Shutdown the system  
reset        System Reset  
exit         End the session  
  
Command >
```

# PCS200R Configuration Options (Cont.)

---

## View System Information

1. Log in to the PCS200R as described on the previous page.
2. At the `Command >` prompt, type **info** and press **Enter**.

The System Information display identifies important information about the PCS200R, including the unit serial number, hardware ID (firmware version), software versions, MAC addresses, and IP addresses, for example:

```
PCS200R Pro:Centric Server v7.4
Copyright (c) 2010 - 2015 Zenith Electronics LLC

SN:                201-12301011
Hardware ID:       2
OS version:        Linux 3.4.0-zenith-pcs200+
OS release:        #121 SMP Mon Dec 8 10:38:49 CST 2014
Ctrl MAC:          00:0C:63:40:36:14
Ctrl IP:           10.1.2.3
Feat MAC:          00:0C:63:40:36:15
Feat IP:           n/a
VPN IP:            n/a
RF config:         Mode 3, 256-QAM-B, RF: 6 MHz, 5.36 MSps, ASI: 38.81 Mbps
RF channel:        75
Channels:          1
Local time:        Mon Jan 19 14:42:02 EST 2015
```

**Note:** If RF output is configured for DVB-C modulation, the display will identify the RF frequency (in KHz) in place of the RF channel.

It is recommended that you record this information for future reference. If you find it necessary to call customer service or engineering support, please have this information available.

## Configure Network Settings

This option enables you to configure the network settings of the PCS200R Ethernet ports. The Control Port is used for remote communication purposes, while the Feature Port is designated for PCS200R IP output.

1. Log in to the PCS200R as described on the previous page.
2. At the `Command >` prompt, type **setip** and press **Enter**.

The system displays an overview of the current network configuration followed by the Network Configuration Menu, for example:

(Continued on next page)

# PCS200R Configuration Options (Cont.)

---

(Continued from previous page)

```
Current Network Configuration

Interface eth0
  Host name:          pcs200r
  Using DHCP:        YES

Interface eth1
  Host name:          pcs200r
  Using DHCP:        NO
  Host IP address:
  Network mask:
  Gateway IP address:
  Speed:              1000Mbps

DNS servers
  Primary DNS:        xxx.xxx.xxx.xxx
  Secondary DNS:      xxx.xxx.xxx.xxx

-----
Network Configuration Menu
-----

eth0      Configure Control Port IP
eth1      Configure Feature Port IP
dns       Configure DNS
exit      Exit network configuration
```

Choose item to modify >

3. Either:

- Continue with step 4 for information on modifying the IP configuration of either the Control Port or the Feature Port.
- Go to step 10 for information on modifying the DNS configuration.
- To exit the Network Configuration Menu without modifying any settings, type **exit** at the Network Configuration Menu > prompt.

4. Type **eth0** or **eth1**, as applicable, and press **Enter** to modify the configuration of the Control Port or the Feature Port, respectively.

5. At the Host name [pcs200r]: prompt, either press **Enter** to accept the default value in square brackets, or type a new host name and then press **Enter**.

6. (Control Port configuration only) At the Using DHCP (Y/N) [Y]: prompt, type **y** to use DHCP, or type **n** to specify the network IP addresses. Then, press **Enter**.

(Continued on next page)

# PCS200R Configuration Options (Cont.)

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(Continued from previous page)

7. If the port is NOT using DHCP, type the information requested at each of the following prompts. Type each address in the format `xxx.xxx.xxx.xxx`, and press **Enter** after each entry.



**Note: If the Feature Port is to be used for IP streaming, you MUST configure the port with a static IP address that is on a different subnet than the Control Port IP address.**

```
This host IP address []:  
Network mask []:  
Gateway IP address []: (Control Port configuration only)
```

**Note:** If you are currently configuring the Feature Port, you will not be prompted for a gateway IP address, though you will be prompted for the port speed (see step 8).

8. (Feature Port configuration only) At the `Enter Speed 100 or 1000 [1000]:` prompt, either press **Enter** to accept the default value in square brackets, or type “100” or “1000,” as applicable, and press **Enter** to set the appropriate port speed (in Mbps).
9. Once you enter the gateway address (eth0) or the port speed (eth1), the system will redisplay the Network Configuration Menu.
  - To modify the configuration of the second Ethernet port, repeat steps 4 to 8.
  - To modify the DNS configuration, continue with step 10.
  - If no additional network configuration is required, go to step 11.
10. To change the DNS configuration, type **dns** and press **Enter**.

At each of the following prompts, type the information requested. Type each address in the format `xxx.xxx.xxx.xxx`, and press **Enter** after each entry.

```
Configuring DNS  
Primary DNS IP address []:  
Secondary DNS IP address []:
```

Once you enter the secondary DNS IP address, the system will redisplay the Network Configuration Menu. You can select another option to modify (see previous steps) or you can exit as described below.

11. When you are finished with network configuration, type **exit** at the Network Configuration Menu `>` prompt.

The system will display an overview of the new network configuration and then prompt for confirmation to save the changes, for example:

```
New Network Configuration  
  
Interface eth0  
  Host name:          pcs200r  
  Using DHCP:        YES
```

(Continued on next page)



# PCS200R Configuration Options (Cont.)

---

(Continued from previous page)

```
Interface eth1
  Host name:          pcs200r
  Using DHCP:        NO
  Host IP address:   xxx.xxx.xxx.xxx
  Network mask:     xxx.xxx.xxx.xxx
  Gateway IP address:
  Speed:            1000Mbps

DNS servers
  Primary DNS:       xxx.xxx.xxx.xxx
  Secondary DNS:     xxx.xxx.xxx.xxx
```

Do you want to save the new configuration? [y/n]:

12. Type **y** or **n** and press **Enter**, as appropriate.

If you opt **NOT** to save the new configuration, the system will return immediately to the Main Menu `Command >` prompt. Otherwise, the system will confirm the configuration updates and prompt you to reset the system:

```
New configuration has been saved. Please restart the system.
```

13. If you are ready to reset the system immediately, at the `Command >` prompt, type **reset** and press **Enter** (see “Reset the System” on page 32 for further information).

**Note:** If you intend to modify additional configuration settings during the current session, you may wait until all changes are complete before you reset the system.

## Set the Time Zone

**Note:** See “Set the Date and Time” on page 27 for information on setting the date and time for the PCS200R.

1. Log in to the PCS200R as described on page 21.
2. At the `Command >` prompt, type **tz** and press **Enter**.

The system displays the current time zone information for the PCS200R and prompts you to specify whether or not you wish to change the time zone.

```
Current time zone is: America/New York
Change the time zone? [y/n]:
```

3. Either:

- Type **n** and press **Enter** to return to the Main Menu `Command >` prompt without changing the current time zone.
- Type **y** and press **Enter** to change the time zone. Then, continue with step 4.

(Continued on next page)

# PCS200R Configuration Options (Cont.)

---

(Continued from previous page)

4. The system will display the following prompt for a location, followed by a list of options:

```
Please identify a location so that time zone rules can be set correctly.
Please select a continent or ocean.
```

At the #? prompt, type the number that corresponds to the appropriate option for your location, and then press **Enter**.

5. The system will display the following prompt for a country, followed by a list of options:

```
Please select a country.
```

At the #? prompt, type the number that corresponds to the appropriate option for your country, and then press **Enter**.

6. The system will display the following prompt for a region, followed by a list of options:

```
Please select one of the following time zone regions.
```

At the #? prompt, type the number that corresponds to the appropriate option for your region, and then press **Enter**.

After you specify the time zone region, the system displays an overview of your location selections and prompts for confirmation, for example:

```
The following information has been given:
```

```
United States
Central Time
```

```
Therefore TZ='America/Chicago' will be used.
```

```
Local time is now:      Mon Jan 19 16:23:10 CDT 2015.
```

```
Universal Time is now: Mon Jan 19 22:23:10 UTC 2015.
```

```
Is the above information OK?
```

```
1) Yes
```

```
2) No
```

```
#?
```

7. Either:

- Type **1** and press **Enter** if the information in the display is correct. The system will confirm the setting and then prompt you to reset the PCS200R:

```
Time zone has been set. Please reset the board.
```

```
Continue with step 8.
```

- Type **2** and press **Enter** to return to the initial location prompt and reset the time zone (repeat this procedure from step 4).

8. If you are ready to reset the system immediately, at the `Command >` prompt, type **reset** and press **Enter** (see “Reset the System” on page 32 for further information).

**Note:** If you intend to modify additional configuration settings during the current session, you may wait until all changes are complete before you reset the system.

# PCS200R Configuration Options (Cont.)

---

## Set the Date and Time

By default, the PCS200R is synchronized with an NTP server and configured for the US Eastern time zone. If the PCS200R is connected to the Internet, the NTP client will periodically update the time setting on the PCS200R. If the PCS200R is not connected to the Internet, you also have the option to disable NTP synchronization and specify date and time data manually. Refer to “Set the Time Zone” above for information on setting the time zone.

1. Log in to the PCS200R as described on page 21.
2. At the `Command >` prompt, type **time** and press **Enter**.
3. At the `Synchronize time automatically via NTP (Y/N) ? [Y]:` prompt, either:
  - Type **y** and press **Enter** if you intend to use an NTP server for time synchronization.
  - Type **n** and press **Enter** to set the time manually.
4. The remaining steps depend on whether or not you opted in the previous step to synchronize time via an NTP client. Refer to the appropriate subsection below.

### Synchronize Time via NTP Client

- a) At the `Enter a new NTP server IP: [time.nist.gov]:` prompt, either press **Enter** to accept the default value in square brackets, or type the appropriate NTP server name or IP address and press **Enter**.
- b) At the `Enter a new NTP update interval, in hours [12]>` prompt, either press **Enter** to accept the default value in square brackets, or type the appropriate NTP update interval (in hours) and press **Enter**.

The system will display confirmation and then prompt you to reset the PCS200R, for example:

```
Time will be synchronized every 12 hours via NTP from server: xxx
Please reset the board
```

(where xxx is the NTP server name or IP address you provided above)

- c) If you are ready to reset the system immediately, at the `Command >` prompt, type **reset** and press **Enter** (see “Reset the System” on page 32 for further information).

**Note:** If you intend to modify additional configuration settings during the current session, you may wait until all changes are complete before you reset the system.

### Manual Specification of Date and Time

The system will display the current time (for example: `Current time: 2015-01-19 18:49:56`) and then initiate a series of prompts to enable you to set the time.

- a) At each of the following prompts, type the year, month, and day, respectively. Note that all three of these fields require numerical values. Press **Enter** after each entry.

(Continued on next page)

# PCS200R Configuration Options (Cont.)

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(Continued from previous page)

If applicable, you can also press **Enter** at each prompt to accept the default value in square brackets.

```
Enter new year [2015]>
Enter new month [01]>
Enter new day [19]>
```

- b) At each of the following prompts, type the hour and minute, respectively. Note that the hour should be entered in 24-hour format. Press **Enter** after each entry.

If applicable, you can also press **Enter** at each prompt to accept the default value in square brackets.

```
Enter new hour (0-23) [18]>
Enter new minute [49]>
```

- c) The system will display the new time and then prompt for confirmation, for example:

```
New time: 2015-01-19 18:53:00
Apply? [y/n]
```

Either, type **y** and press **Enter** to apply the new configuration to the system, or type **n** and press **Enter** to return to the `Command >` prompt without changing the time configuration.

If you apply the new configuration, the system will display confirmation, for example:

```
New time is set
```

## Change the Login Password

For security purposes, it is recommended that the admin user login password be unique to the system. Note that the login password is case-sensitive.

1. Log in to the PCS200R as described on page 21.
2. At the `Command >` prompt, type **pwd** and press **Enter**.

The system prompts for the current admin user password:

```
Changing password for admin
Old password:
```

3. Type the current password and press **Enter**. The system will then prompt you to type and retype the new password:

```
New password:
Retype password:
```

4. Type and then retype the new password at the prompts. Press **Enter** after each entry.

Once you complete the Password fields successfully, the system displays confirmation:

```
Password for admin changed by admin.
```

# PCS200R Configuration Options (Cont.)

## Monitor the System

This option enables you to view dynamic system streaming data.

1. Log in to the PCS200R as described on page 21.
2. At the `Command >` prompt, type **monitor** and press **Enter** to display the current system data, for example:
3. The system data will refresh every second. When you are finished monitoring streaming data, press **Enter** to stop the system monitor and return to the `Command >` prompt.

### Example: System Monitor Display

SYSTEM MONITOR

Date: 2015-01-19 16:44:27  
SN: 401-12080008  
Version: 1.1  
Output: RF\_QAM256\_6M  
Pg/RF: 2

Bitrates (Mbps):

Slot	Content	Secs	Mbit	Pct	RF Out
1	GEM Data	685	8.9	-	75-1
2	Video1.ts	100	5.3	86	75-47 :)
4	Video2.ts	6	5.1	1	76-1 :)
5	Video3.trp	205	4.6	78	76-2 :)
7	Video4.ts	40	4.2	12	77-1 :)
8	Video5.trp	172	2.7	66	77-2 :)
10	Video6.ts	12	3.5	3	78-1 :)
11		-	0.0	-	78-2
13	Video7.ts	171	4.7	94	79-1 :)
14		-	0.0	-	79-2
16		-	0.0	-	80-1
17		-	0.0	-	80-2
19		-	0.0	-	81-1
20		-	0.0	-	81-2
22		-	0.0	-	82-1
23		-	0.0	-	82-2

Press <Enter> key to exit the monitor

**Note:** This example shows data for a system that is configured for QAM-B RF output (the first channel is reserved for GEM/site data). If a solid state drive is installed in the server's SSD slot, the system monitor display shows streaming data for each of the active video programs.

# PCS200R Configuration Options (Cont.)

---

## Format the Solid State Drive File System

This command formats the file system of the solid state drive installed in the PCS200R SSD slot and is essential for video playout operation (see Reference section, “Using an SSD Storage Device with the PCS200R,” for further information).

**Note:** If the drive was previously formatted for use with a different PCS200R server, you do not need to reformat the file system.



**Caution: Any files that are currently loaded on the solid state drive will be deleted during formatting; it is not possible to recover files once the formatting is initiated.**

1. Log in to the PCS200R as described on page 21.
2. At the `Command >` prompt, type **format** and press **Enter**.

The system will prompt for confirmation:

```
Are you sure you want to continue? [y/n]:
```

3. Either type **y** and press **Enter** to continue, or type **n** and press **Enter** to return to the Main Menu without formatting the drive.

If you elect to continue, the system will then prompt you to re-enter the admin user password before initiating the formatting process.

```
Please re-enter the admin password to format the drive.
```

```
Password:
```

4. Type the admin password and press **Enter**.

Formatting progress is displayed on the screen. When formatting is complete, the system redisplay the `Command >` prompt.

## Update the PCS200R Operating System via Ethernet



**Caution: Do NOT initiate simultaneous menu sessions while a software update is in progress. Doing so may interfere with the active process and may corrupt the system configuration and/or cause the PCS200R to cease normal operation.**

This option enables you to update the PCS200R operating system via the Ethernet. The appropriate update file must be provided by LG; the system will not download an improper file.

**Note:** See “Update the PCS200R Operating System via Serial Link” on the following page for information on updating software via a serial link.

1. Log in to the PCS200R as described on page 21.
2. At the `Command >` prompt, type **update** and press **Enter**.
3. At the `Enter update filename:` prompt, type in the software update filename and press **Enter**.

(Continued on next page)

# PCS200R Configuration Options (Cont.)

---

(Continued from previous page)

The system will initiate the download and confirm progress, for example:

```
Downloading file: pcs200r_app_xxxx.upd
```

4. When the update is successfully completed, reset the system (see “Reset the System” on the following page for further information).

## Update the PCS200R Operating System via Serial Link



**Caution: Do NOT initiate simultaneous menu sessions while a software update is in progress. Doing so may interfere with the active process and may corrupt the system configuration and/or cause the PCS200R to cease normal operation.**

This option enables you to update the PCS200R operating system via a serial link to the PCS200R. The appropriate update file must be provided by LG; the system will not transfer an improper file.

**Note:** See “Update the PCS200R Operating System via Ethernet” on the previous page for information on updating software via the Ethernet.

1. Log in to the PCS200R as described on page 21.
2. At the `Command >` prompt, type **updser** and press **Enter**.
3. At the `Send file using XMODEM` prompt, transfer the new application/OS file using Xmodem protocol. For example, in HyperTerminal, select **Transfer** and then **Send File...** In the Send File window, enter or select the appropriate filename in the Filename field, and select **Xmodem** in the Protocol field.

The system will display progress messages as well as the result of the update process (which may take several minutes).

4. When the update is successfully completed, reset the system (see “Reset the System” on the following page for further information).

## Update the VPN Setup

This option enables you to update the VPN client via a serial link to the PCS200R. The appropriate update file must be provided by LG; the system will not transfer an improper file.

1. Log in to the PCS200R as described on page 21.
2. At the `Command >` prompt, type **vpn** and press **Enter**.
3. At the `Send VPN client file using Xmodem ...` prompt, transfer the new VPN client file using Xmodem protocol. For example, in HyperTerminal, select **Transfer** and then **Send File...** In the Send File window, enter or select the appropriate filename in the Filename field, and select **Xmodem** in the Protocol field.

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# PCS200R Configuration Options (Cont.)

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(Continued from previous page)

The system will display progress messages as well as the result of the update process (which may take several minutes).

4. When the update is successfully completed, reset the system (see “Reset the System” below for further information).

## Shut Down the System

This command allows you to shut down the system in an orderly manner. Use this command to shut down the PCS200R, for example, if you intend to physically move the unit from one location to another. It is also recommended that you run this command from the PCS200R Service Port in order to track detailed shutdown log messages.

**Note:** Once you use this command, you must remove power from (i.e., unplug) the unit and then plug the AC power cord back into a powered AC line receptacle when you are ready to restart the server. It is not possible to restart the server remotely.

1. Log in to the PCS200R as described on page 21.
2. At the `Command >` prompt, type **shut** and press **Enter**.

The system will prompt for confirmation:

```
Are you sure you want to shut down the system? [y/n]:
```

3. Either:
  - Type **y** and press **Enter** to shut down the system immediately. The shutdown typically takes about a minute. When the PCS200R is in its shutdown state, the front panel LED will blink steadily green.
  - Type **n** and press **Enter** to return to the Main Menu without shutting down the system.

## Reset the System

1. If not already logged in, log in to the PCS200R as described on page 21.
2. At the `Command >` prompt, type **reset** and press **Enter**.

The system will prompt for confirmation:

```
Are you sure you want to reset the system? [y/n]:
```

3. Either:
  - Type **y** and press **Enter** to initiate an immediate reset of the PCS200R. The reset process may take up to two minutes, after which the system resumes normal operation.
  - Type **n** and press **Enter** to return to the Main Menu without resetting the system.

## Exit the Current Session

At the `Command >` prompt, type **exit** and press **Enter** to end the current session.



# Reference: Using an SSD Storage Device with the PCS200R

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To provide capacity for additional media/video playout channels, a (customer-supplied) SATA solid state drive may be installed in the SSD slot on the PCS200R rear panel. This section describes how to install the drive and also provides information on the required formatting.

## Install the Solid State Drive

You will need to have available the four M3 x 5 mm screws and attendant washers (one lock washer per screw) shipped with the PCS200R. These will be used to attach the solid state drive to the PCS200R SSD drive tray assembly.



**Caution: The Pro:Centric server is NOT designed to be hot-swappable!!! Power to the PCS200R must be removed before the solid state drive is inserted or removed.**



**Caution: The solid state drive used must be UL listed, FCC compliant, and/or other applicable agency-recognized/listed. (Maximum current draw = +5V DC @ 2.0 Amps)**



**Caution: The solid state drive must be inserted and removed by qualified service personnel only.**

1. Log in to the PCS200R command line interface and use the “shut” command to shut down the system in an orderly manner. See “Shut Down the System” on page 32 for further information.
2. Put on a properly grounded, antistatic wrist strap to avoid causing electrostatic (ESD) damage both to the solid state drive and the PCS200R.
3. Unpack the solid state drive unit.
4. Remove the PCS200R AC power cord from the AC line receptacle from which it is receiving power.
5. Disengage the SSD slot cover from the PCS200R rear panel by turning the thumbscrew on each side of the cover counterclockwise (use a Phillips screwdriver if necessary). Then, slowly, slide out the SSD drive tray assembly.



**Caution: As shipped, the cabling/SATA connector for the solid state drive is connected by zip tie to the rear end of the SSD drive tray assembly. Use scissors or a similar tool to remove the zip tie, taking care not to damage the cables.**

6. Place the solid state drive onto the drive tray, and use the four M3 x 5 mm screws and washers to attach it to the drive tray assembly. You may attach the drive either from the bottom or from the sides (see diagram a on following page).
7. Plug the PCS200R SATA connector/cabling into the solid state drive (see diagram b on following page).

(Continued on next page)

# Reference: Using an SSD Storage Device with the PCS200R (Cont.)

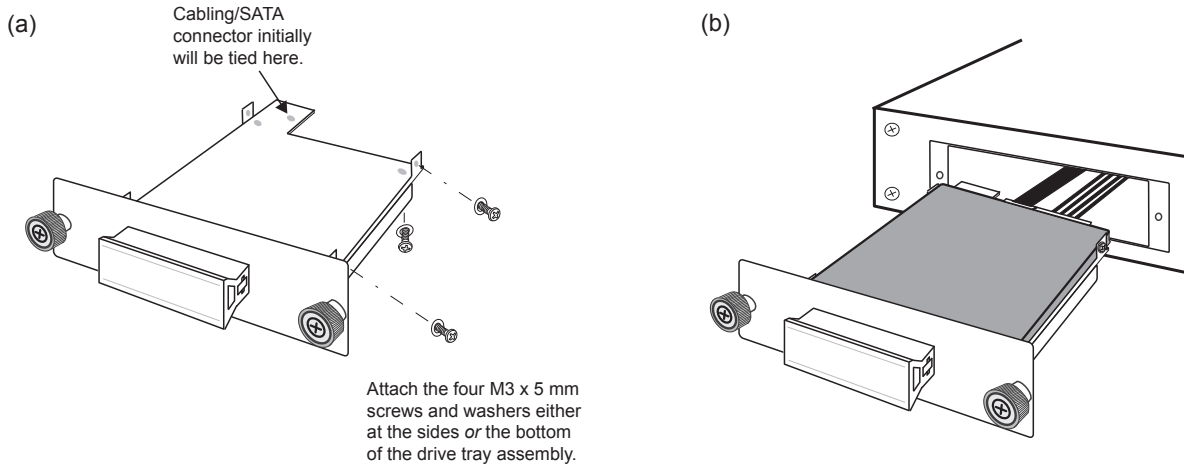
(Continued from previous page)

- Slide the drive tray assembly back into the PCS200R. Then, engage and tighten the thumbscrew on each side of the slot cover securely.



**Note:** It is recommended that you use a Phillips screwdriver to secure the thumbscrews on the SSD slot cover.

- Plug the PCS200R AC power cord back into its powered AC line receptacle to restore power. After it is powered back on, the PCS200R resumes normal operation.



## Format the Solid State Drive



**Caution:** In order to use the solid state drive for video playback, you **MUST** format the file system. Note that during formatting, any files that are currently loaded on the solid state drive will be deleted.

Log in to the PCS200R command line interface and use the “format” command to format the drive’s file system. See “Format the Solid State Drive File System” on page 30 for further information. All additional video playback configuration is performed in the Pro:Centric server Admin Client (refer to the *Pro:Centric Server Admin Client User Guide*).

**Note:** If the drive was previously formatted for use with another PCS200R server, you do not need to reformat the file system.

# Troubleshooting

## PCS200R Setup

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The following sections provide basic troubleshooting information for the PCS200R.

### Equipment Setup Review

- Make sure all connectors and connections are tight and secure on all entertainment system components.
- Check the PCS200R LED. Under standard operating conditions, i.e., when the PCS200R is booted and operating normally, the PWR (Power) LED on the PCS200R front panel is continuously lit green. If there is a hardware fault, the PWR LED will turn and stay red.

**Note:** When power is first applied to the PCS200R, the PWR LED initially flashes red and then turns green (blinking during boot-up).

### Network Setup

If the network is configured for DHCP but the PCS200R has not been assigned an IP address, i.e., the Ctrl IP field in the PCS200R System Information display is blank:

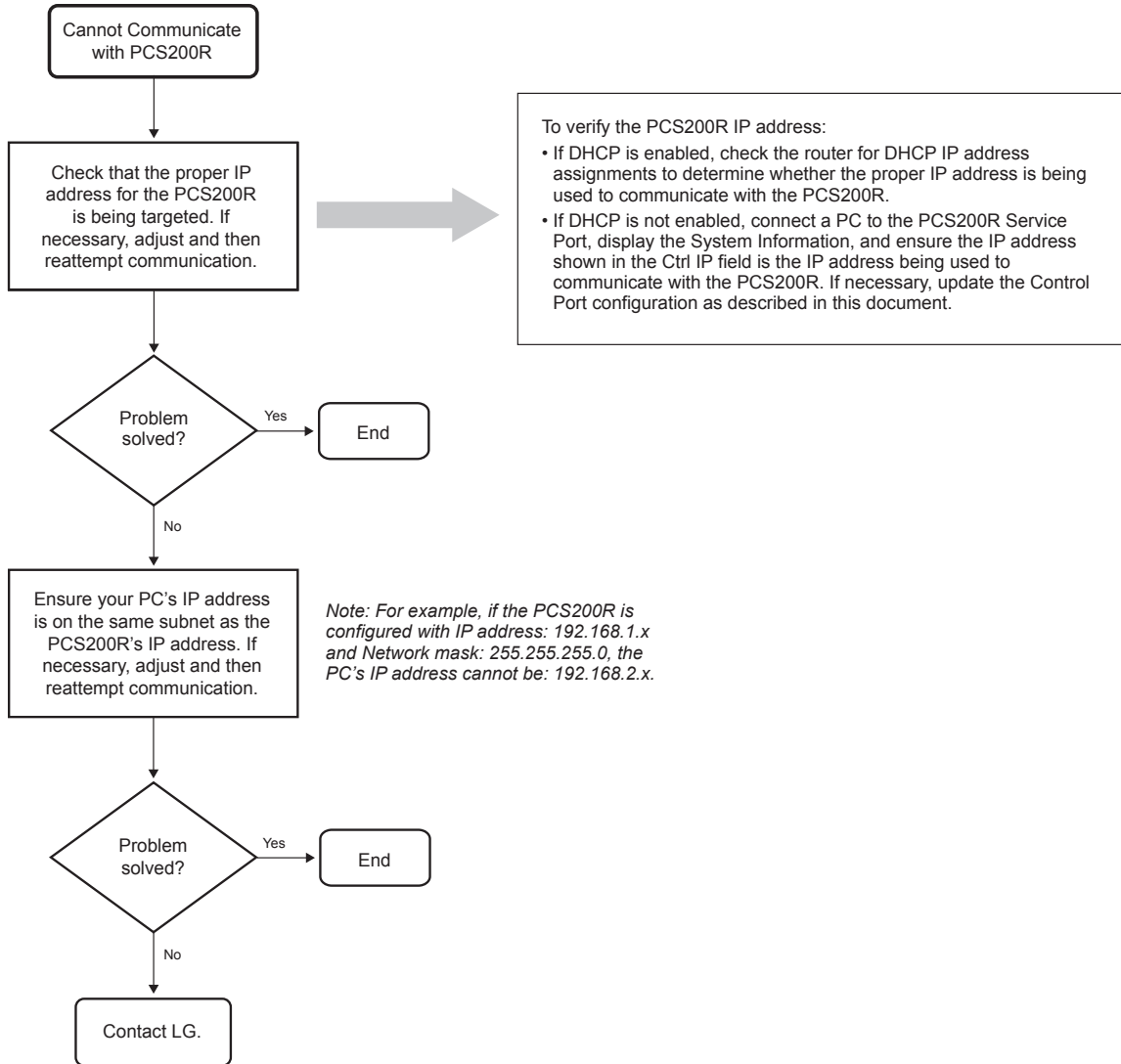
1. Check the Control Port connector on the rear panel of the PCS200R. Make sure the cable connection is tight and secure.
2. Observe the green LED on the Control Port. Once the PCS200R is connected to the network, the LED will be lit continuously.
3. Contact the network administrator to verify the network status and check that the DHCP server is working properly.

# Troubleshooting (Cont.)

## PCS200R Communication

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If you are unable to establish remote communication with the PCS200R, refer to the following flow chart.



# Specifications

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## Dimensions

Height: 1.692 inches (42.977 mm)  
Width: 19.0 inches (482.6 mm) (for EIA standard 19-inch rack mount)  
Depth: 8.5 inches (215.9 mm)  
Weight: 5.65 pounds (2.56 kgrms) rack-only weight

## Environmental Operating Conditions

Temperature (Tma): 0° to 40° Celsius  
32° to 104° Fahrenheit  
Humidity: 95% non-condensing

## Environmental Storage Conditions

Temperature: -20° to 70° Celsius  
-4° to 158° Fahrenheit  
Humidity: 95% non-condensing

## Electrical

RF Out Connectors (2)\*: 75 Ohm, Type 'F'  
Frequency: VHF/UHF 54-865 MHz  
RF Output Span: Up to 8 Contiguous Channels (typically 48-64 MHz)  
RF Output Frequency Range: 54 MHz to 865 MHz  
Active Output Level at RF Out jacks: -1 dBm (+47.75 dBmV) Typical  
Test Output Level: -47.75 dBm (+1 dBmV) Typical  
Frequency Accuracy: ±5 ppm  
Impedance at ASI Out jack: 75 Ohms  
Level at ASI Out jack: 800 mv  
DC Input: +12V DC @ 3.25 Amps  
Ethernet Connector (Control Port): 10/100/1000BaseT, RJ-45  
Ethernet Connector (Feature Port): 100/1000BaseT Full Duplex, RJ-45  
USB Port\*: USB 2.0  
Solid State Drive: UL listed, FCC compliant, and/or other applicable agency-recognized/listed (Maximum current draw = +5V DC @ 2.0 Amps)

## Modulation Specifications

Standard: ITU-T J.83 Annex B (QAM-B)  
Constellations: 64-QAM, 256-QAM  
Symbol Rate: 64-QAM 5.056941 MBaud  
256-QAM 5.360537 MBaud  
Interleaving: Fixed I = 128, J = 1

Standard: EN 300 429 V1.2.1 (DVB-C)  
Constellations: 64-QAM, 256-QAM  
Symbol Rate: 64-QAM 6.9 MBaud  
64-QAM 6.111 MBaud  
256-QAM 6.9 MBaud  
256-QAM 6.111 MBaud

\* RF OUT (0 dBmV) connector and USB port reserved for service technician use only.

Note: Design and specifications subject to change without prior notice.

# Document Revision History / Notes

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## Document Revision History

<b>Date</b>	<b>Description</b>
June 2014	Revision A: New document
July 2014	Revision B: FCC notice update
October 2014	Revision C: New system shutdown command
December 2014	Revision D: Safety warning update
February 2015	Revision E: SSD and system monitor updates
April 2015	Revision F: FCC Notice update

Product documentation is available online at: [www.LGolutions.com](http://www.LGolutions.com).

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## Notes

# Open Source Software Notice

<b>Product Type</b>	Pro:Centric Server
<b>Model Number/Range</b>	PCS200R

Those products identified by the Product Type and Model Range above from LG Electronics, Inc. (“LGE”) contain the open source software detailed below. Please refer to the indicated open source licences for the terms and conditions of their use.

Components	License
bash, busybox, das u-boot, dev, e2fsprogs, ethtool, gawk, grep, hotplug, iptables, linux kernel, lrzsz, lzo, merge, module-init-tools, mtd-utils, net-tools, ntfs-3g, ntpclient, openvpn, pciutils, procinfo, procps, screen, skell, sysconfig, sysklogd, time, usbutils	GPL 2.0
eglibc, ffmpeg, gmp, Java SwingLabs, libelf, libusb, LIVE555 Streaming Media, openRTSP, termcap	LGPL 2.0/2.1

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flex, portmap, tcp-wrappers	BSD License
libcurl	Curl License
dhcp, expat	MIT License
openssh	OpenSSH License
OpenSSL	OpenSSL License
sudo	sudo License
zlib	zlib/libpng License

# LG PCS200R Pro:Centric Server Warranty

**Broadcast Products** Welcome to the LG family! We believe that you will be pleased with your new PCS200R Pro:Centric Server. Please read this warranty carefully, it is a "LIMITED WARRANTY" as defined under Federal Law. This warranty gives you specific legal rights, and you may also have other rights that vary from state-to-state within the U.S.A.

## LG's RESPONSIBILITY

- Warranty Term** One year parts and labor from date of purchase or delivery date.
- Parts** New or remanufactured replacements for factory-defective parts may be used. Such replacement parts are warranted for the remaining portion of the original warranty period.
- Warranty Service** Warranty service is provided at LG. Customer pays for shipping charges to LG; LG pays for return shipping charges to return PCS200R Pro:Centric Server to customer. Call **1-888-865-3026** for further information.
- Not Covered** This warranty covers manufacturing defects and does not cover installation, adjustment of customer controls, installation or repair of antenna systems, cable converters or cable company-supplied equipment; it also does not cover damage due to misuse, abuse, negligence, acts of God or other causes beyond the control of LG. Any alteration of the product after manufacture voids this warranty in its entirety.

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## OWNER'S RESPONSIBILITY

- Effective Warranty Date** Warranty begins on the date of delivery of the PCS200R Pro:Centric Server.  
**For your convenience, keep the dealer's dated bill of sale or delivery ticket as evidence of the purchase date.**
- Installation Guide** Read the Installation & Setup Guide carefully so that you will understand the operation of the PCS200R Pro:Centric Server and how to adjust the settings.
- Warranty Service** **For warranty service information, call 1-888-865-3026.** Parts and service labor that are LG's responsibility (see above) will be provided without charge. Other service is at the owner's expense. If you have any problem in obtaining satisfactory warranty service, call **1-888-865-3026**.  
You must provide the model number, serial number and date of purchase or date of original installation.

For Customer Support/Service, please call:

**1-888-865-3026**

[www.LGsolutions.com](http://www.LGsolutions.com)



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